



## Putting Research to Work

WisDOT RD&T E-Newsletter, May 2005

Technical information for state DOT highway professionals

Prepared by CTC & Associates LLC

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## Designing for the Future

### WSDOT Draft EIS Wins with Reader-Friendly Format

A draft environmental impact statement (see <http://www.wsdot.wa.gov/projects/viaduct/DEIS.htm>) written in plain English has won Washington State DOT a national environmental award. The EIS for the Alaskan Way Viaduct features a question-and-answer format supported by photos, illustrations and maps of the project, and uses reader-friendly language to communicate project alternatives to the public and decision makers. Read the press release at [http://www.wsdot.wa.gov/news/2005/apr06\\_viaductaward.htm](http://www.wsdot.wa.gov/news/2005/apr06_viaductaward.htm).

### NYSDOT Finds CSD Solution to Interchange Problems

A congested interchange on the Long Island Expressway created several challenges for New York State DOT: Widening it could negatively affect a treasured park and nearby residential areas. Engineers developed context-sensitive solutions that included raising the mainline roadway to allow existing loop ramps to be replaced with direct connector ramps, restoring 12 acres of park land. Read more in *Better Roads* at <http://www.betterroads.com/articles/mar05e.htm>.

### Battling Erosion, Delaware Moves Bridge Piers Out of the Water

Five spans built across Indian River Inlet in Delaware over the years have failed because of severe erosion at the base of the bridges' piers. To avoid the inlet's turbulent waters, engineers designed a new cable-supported bridge that relies on two concrete piers sunk 100 feet into the ground on both sides of the water. The 1,300-foot span will be the longest of its kind in the world. Read more in the *Delaware News Journal* at [http://www.ce.udel.edu/cibre/news%20and%20events/IRIB\\_News\\_Journal.htm](http://www.ce.udel.edu/cibre/news%20and%20events/IRIB_News_Journal.htm).

### Real-Time Utility Location

Locating buried utility lines, and working around them, can cause headaches on a construction site. To minimize project delays and line breaks, a Florida surveying firm provides real-time utility location (including depth measurements) by combining ground-penetrating radar, GPS and vacuum technologies. Florida DOT used the firm's services on a recent fast-tracked highway expansion project that required utility relocation. See the article in *Point of Beginning* magazine at <http://www.pobonline.com/CDA/ArticleInformation/Article/1,9169,147853,00.html>.

### Greece's Rion-Antirion Bridge Honored for Engineering Feats

The designers of Greece's Rion-Antirion Bridge had plenty of challenges to overcome: deep waters, weak subsurface soils, high seismicity and constant wind topped the list. Their solutions included "floating" pier bases over reinforced soils, a system of dampers and fuses to control deck and pylon movements, and transition piers capable of accommodating three-dimensional displacements and rotations. The bridge was recently named this year's Outstanding Civil Engineering Achievement by the American Society of Civil Engineers; see the press release at [http://www.asce.org/pressroom/news/display\\_press.cfm?uid=1790](http://www.asce.org/pressroom/news/display_press.cfm?uid=1790), and read more about the bridge at Faber Maunsell's Web site at <http://www.fabermaunsell.com/MarketsAndServices/39/68/index.jsp>.

### **Mitigation Bank a Win-Win Approach for WSDOT**

Washington State DOT's newest wetland mitigation bank, the state's largest at 230 acres, will allow WSDOT to begin offsetting the impacts of planned highway widening projects before construction begins. In addition to providing greater environmental benefits, this mitigation bank will cost about 25% less than building several smaller, non-bank mitigation sites. Read the press release at [http://www.wsdot.wa.gov/regions/southwest/communications/news/2005/Mar/03-30-05\\_NewaukumBank.cfm](http://www.wsdot.wa.gov/regions/southwest/communications/news/2005/Mar/03-30-05_NewaukumBank.cfm).

### **Highway Design from the Motorcycle's Perspective**

In an effort to better integrate motorcycles into highway design and traffic management, the UK's Institute of Highway Incorporated Engineers has published "Engineering Guidelines for Motorcycling" (see <http://ihie.org.uk/index4.asp?cat=16&d=2&pageid=669644>). The guidelines address road design, traffic calming, maintenance procedures and more. Read the press release at <http://www.bmf.co.uk/press/2005/press324.html>.

## **Construction and Materials Innovations**

### **Europe Reduces Pavement Noise with Holistic Approach**

A 2004 scan tour highlighted Europe's integrated approach to reducing pavement noise. New pavement technologies are combined with noise barriers and policy approaches to vehicle and tire design. Key pavement types include thin surface courses of negatively textured gap-graded asphalt mixes for severe winter climates; highly porous asphalt in single and double layers on rural roads with moderate winters; and exposed aggregate concrete pavements where rigid designs are preferred. Read more in the latest issue of *Focus* at <http://www.tfhr.gov/focus/apr05/04.htm>.

### **Wisconsin, FHWA Studies Find Uses for Recycled Materials**

A new FHWA study featured in *Focus* (see <http://www.tfhr.gov/focus/apr05/03.htm>) demonstrates uses of recycled concrete aggregate in asphalt, in shoulders, as base courses and more. Materials such as furnace slag can be mixed in rigid concrete pavement, as the Wisconsin Highway Research Program details in a new study (see <http://www.dot.wisconsin.gov/library/research/docs/finalreports/02-14afurnaceslag.pdf>). Canada also recently released a report on best practices in recycling pavement (see <http://www.infraguide.ca/lib/Db2File.asp?fileid=4556>).

## **Operating/Optimizing the System**

### **VDOT Keeps Culverts Clear with 'Beaver Deceiver'**

Beavers have an instinct to build dams where they sense free-flowing water. Unfortunately, dams near culverts create time-consuming maintenance projects for state DOTs. Virginia DOT is testing a device called the Beaver Deceiver, a structure of fence posts and mesh wiring that blocks culvert entrances and minimizes the sensation of flowing water. Preliminary results indicate the devices are effective, and will likely reduce maintenance costs. Read more in VDOT's Bulletin newsletter at <http://www.virginiadot.org/bulletin/2005marapr/OurValues.asp>.

### **ALDOT Median Barriers Reduce Crossover Crashes**

In an effort to reduce crossover median crashes on the state's interstates, Alabama DOT has spent \$14 million putting up 52 miles of median barriers in the last two years. The strategy worked: The crossover fatality rate has been cut in half since the barriers were installed. Read more in *The Decatur Daily News* at <http://www.decaturdaily.com/decaturdaily/news/050412/safety.shtml>. North Carolina has seen similar results; read the press release at [http://www.ncdot.org/news/176release03\\_05.html](http://www.ncdot.org/news/176release03_05.html).

### **Safer, Easier Installation for Temporary Signs**

When temporary signs were needed during paving projects, public works employees in San Juan County, Wash., had always bolted the signs to steel T-posts and driven them into the ground with sledgehammers. An equipment operator devised a safer, easier method of installation: a T-post adapter allows workers to attach the sign to the post after driving. See page 6 of WSDOT's WST2 newsletter at <http://www.wsdot.wa.gov/TA/T2Center/T2Bulletin-archives/2005Spring.pdf>.

### **Passageways Keep Wildlife off Virginia Highways**

Virginia DOT's animal passageways are making tracks with deer and other wildlife. A study by the Virginia Transportation Research Center of seven underpass structures indicates the passageways keep deer and other critters off the state's roadways. Preliminary results show 1,000 deer crossings at three sites and more than 1,000 crossings of small animals. Keeping wildlife off highways means safer traveling for motorists. Read the press release at <http://virginiadot.org/infoservice/news/newsrelease.asp?ID=CULP-0515>. Minnesota DOT has begun incorporating animal crossings into new highway projects as well; read more in the *Duluth News Tribune* at <http://www.duluthsuperior.com/mld/duluthsuperior/news/local/11243206.htm>.

### **Recovering Road Sand in Colorado**

Colorado DOT uses tons of sand each winter on US 40, a winding highway that cuts through the Rocky Mountains. To minimize the amount that ends up in a nearby creek, CDOT incorporated a system of snow storage areas, ditches and culverts into a recent highway expansion project. Along with melted snow, the sand is transported to sediment basins, where it is recovered for future use. CDOT won an FHWA Environmental Excellence Award last month for the project; see [http://www.fhwa.dot.gov/environment/eea2005/roadside\\_resource.htm](http://www.fhwa.dot.gov/environment/eea2005/roadside_resource.htm). Read more at CDOT's project site at <http://www.berthoudpassinfo.com/default.htm>.

### **Texas Landscaping Projects Complement Surroundings**

Context-sensitive landscaping is catching on in Texas. In Austin, TxDOT used native plants at an urban interchange to create a landscape resembling a live oak savanna, reducing erosion and requiring less frequent mowing. See <http://tti.tamu.edu/researcher/newsletter.asp?vol=41&issue=1&article=8>. In Dallas, landscape architects developed a unifying theme for an 11-mile highway corridor based on natural features of the adjacent Trinity River Greenbelt and its tributaries. See [http://www.c-b.com/news/story\\_news.asp?ArticleNum=577&type=News%20Release](http://www.c-b.com/news/story_news.asp?ArticleNum=577&type=News%20Release).

## **Safe Travel/Smart Travel**

### **Multiagency Traveler Assistance**

New York, New Jersey and Connecticut transportation agencies have launched Trips123 (<http://www.trips123.com/>), a traveler information system that provides drivers in the tristate region with comprehensive multimodal, multiagency transportation information and trip planning assistance. Goals include providing more seamless, customer-friendly travel in the metropolitan region. Read the press release at [http://www.xcm.org/Trips123\\_Press\\_Release.pdf](http://www.xcm.org/Trips123_Press_Release.pdf).

### **Improved Traffic Flow During Fog**

Speed variations between vehicles are known to increase crash risk and are a leading cause of crashes in fog-prone areas. To address the problem, Utah DOT installed a fog warning system on I-215 near Salt Lake City consisting of visibility sensors and dynamic message signs that displayed recommended speeds. The system successfully promoted more uniform traffic flow during fog events. Read more in the ITS Benefits and Costs Database at <http://www.benefitcost.its.dot.gov/its/benecost.nsf/ByLink/BOTM-April2005>.

## **NCDOT Work Zone Cameras Keep Drivers Informed**

North Carolina DOT's recent deployment of smart work zone technology for a highway widening project (see <http://www.ncdot.org/projects/us1wake/>) is the state's first deployment in a highly urbanized environment, and the first to provide moving video to the public. Cameras and real-time travel information can be accessed at the project's Web site at <http://142.165.148.220/>.

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Previous issues are available at <http://www.dot.wisconsin.gov/library/publications/format/newsletters/rdt.htm>.

Other e-newsletters for transportation professionals:

**TRB E-Newsletter** from the Transportation Research Board: <http://gulliver.trb.org/news/>.

**The AASHTO Journal** from the American Association of State Highway and Transportation Officials: <http://www.transportation.org/publications/journal.nsf>.

**CTS Research E-News** from the University of Minnesota: <http://www.cts.umn.edu/publications/enews/>.

**Texas Transportation Researcher** from TAMU's Texas Transportation Institute: <http://tti.tamu.edu/researcher/>.

**Minnesota DOT Research Newsletter**: <http://www.research.dot.state.mn.us/newsletter.cfm>

**Austrroads Newsletter** from Austrroads: [http://www.austrroads.com.au/austrroads\\_newsletter.html](http://www.austrroads.com.au/austrroads_newsletter.html).

**Transportation Communications Newsletter**: <http://groups.yahoo.com/group/transport-communications/>.